Cisco ESW 500 Series Switches
Small Business Pro

A Cost-Effective, High-Performance Network Foundation to Keep Your Business Moving

In a world that never slows down, your business needs to keep moving. That means keeping employees connected at all times -- to each other and to the business applications they need to do their jobs. Imagine a network that provides a single, high-performance platform for all of your business applications. Where your employees don't have to worry about reduced productivity because the network is down or because a vital application is unavailable or running too slowly. Imagine being able to manage your entire network platform from a single interface, and being able to easily add new data, voice, video, and wireless applications as your business evolves.

Cisco offers a network switch for small businesses that can make this vision a reality. The Cisco® ESW 500 Series Switches are cost-effective, easy-to-use switches that provide the foundation of your small business network. These high-performance switches deliver the reliability you need to keep your employees connected and productive, preserving the availability of your essential applications and services to keep your business moving.

Cisco ESW 500 Series Switches

The Cisco ESW 500 Series, part of the Cisco Small Business Pro Series, is a group of managed Ethernet switches that provide wire-speed Fast Ethernet and Gigabit Ethernet connectivity, integrated security, quality of service (QoS), and Power over Ethernet (PoE) to support all of your business network needs. These switches integrate easily with other Cisco Small Business Pro Series products as well as the Cisco Smart Business Communications System to provide a complete data, voice, video, and wireless networking solution for your business. With the Cisco ESW 500 Series, you can take advantage of a proven network solution and a broad portfolio of high-performance, easy-to-manage switches that are designed and priced for small businesses.

Figure 1 shows the portfolio of Cisco ESW 500 Series Switches.

Figure 1. Cisco ESW 500 Series Switches

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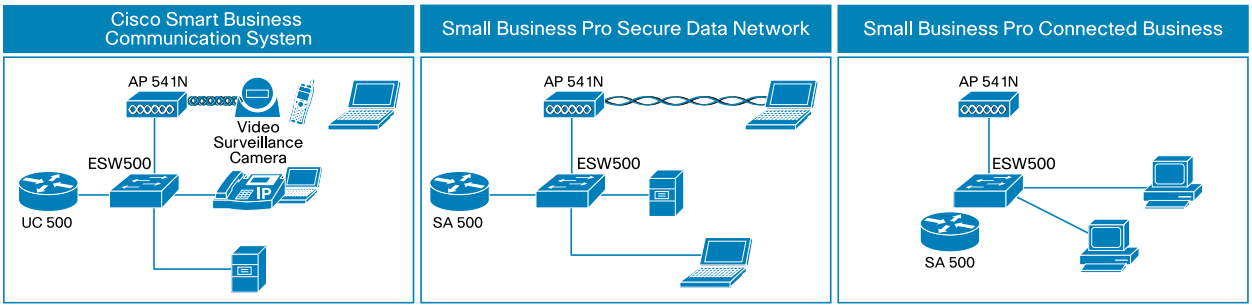
Cisco ESW 500 Series Deployment Scenarios

Figure 2 highlights application scenarios for which the different models of the Cisco ESW 500 Series are well suited.

Figure 2. Sample Deployments of the Cisco ESW 500 Series



- **Move beyond your traditional phone system:** The Cisco Smart Business Communications System lets you transform your business by bringing together all of your communications onto a single network. The ESW 500 Series works hand in hand with Smart Business Communications System products, such as the Cisco Unified Communications 500 Series for Small Business. Together, the solution lets you support all of your company's phone calls, messaging, and data. Your employees can be more productive, and you can save money by managing and paying for just one network.
- **Securely extend network access with wireless:** The ESW 500 Series Switches can connect and power your wireless access points while supporting robust security and identity services to protect your wireless environment. By choosing ESW 500 Series Switches with both PoE and Gigabit Ethernet connectivity, you can easily integrate the Cisco AP 541N Dual Band 802.11n Clustering Access Point into your network. This access point features advanced wireless technologies such as 802.11n and extends the life of your wireless technology investment.
- **Connect your small business:** The Cisco ESW 500 Series Switches meet the needs of a range of small businesses. The 10/100 Fast Ethernet switches can provide outstanding desktop connectivity in small networks to connect computers, printers, and servers. They are well suited to new businesses that are starting up or businesses that previously used basic, unmanaged switches but now require support for additional features such as QoS traffic prioritization and advanced security. The Gigabit Ethernet switches in the Cisco ESW 500 Series can go even further, helping you achieve optimal performance from your desktop computers, servers, and other shared devices with Fast or Gigabit Ethernet connectivity.

Features and Benefits

The Cisco ESW 500 Series Switches provide security, management, and other capabilities far beyond what unmanaged or smart switches can provide, without requiring you to configure (or pay for) features you don't need. The switches are designed to be part of the complete line of Cisco Small Business Pro Series networking and voice communications products that work together as part of a proven, fully integrated, easy-to-use small business solution. The Cisco ESW 500 Series provides:

- **Outstanding performance:** The Cisco ESW 500 Series supports up to Gigabit Ethernet speeds to deliver optimal network performance, enabling you to add high-bandwidth data, voice, video, and wireless applications. Ultimately, the switches give you the ability to meet more rigorous application demands and help ensure that your employees always have access to the tools they need to be responsive to your customers and each other.

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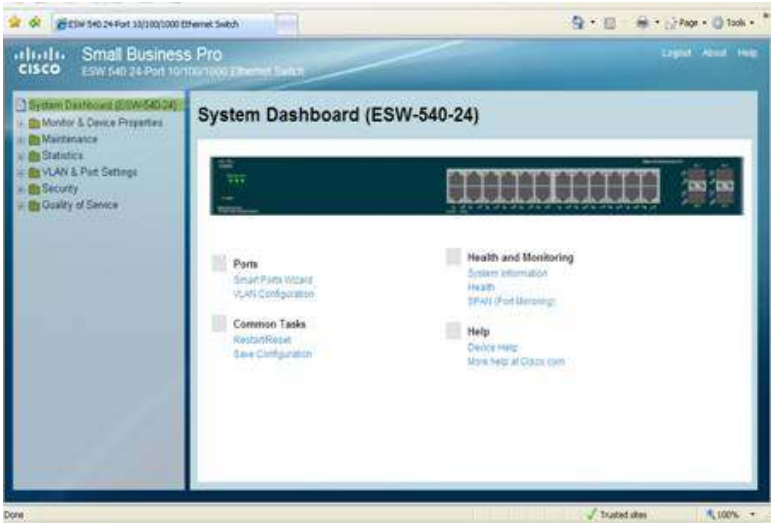
- **High reliability:** Cisco ESW 500 Series Switches have been developed and rigorously tested to provide reliable connectivity and performance, especially when supporting advanced voice, video, and wireless services. They also support an optional redundant power supply that provides uninterrupted failover to help ensure continuous operation, without the need to reboot, even if the primary power supply fails. These features help you keep your network available, prevent costly downtime, and keep your employees and customers connected to the applications they need.
- **Power over Ethernet:** Cisco ESW 500 Series Switches are available with up to 48 PoE ports of Fast Ethernet and 24 PoE ports of Gigabit Ethernet connectivity. PoE allows you to power network-attached devices such as IP phones, video cameras, and wireless access points directly over the Ethernet connection, without an external power supply. The result is a simpler and less expensive deployment, without the need to install a separate power supply for each connected endpoint.
- **Quality of service:** Cisco ESW 500 Series Switches feature QoS intelligence to prioritize delay-sensitive and high-bandwidth network traffic, enhancing network performance and allowing businesses to support demanding services such as real-time voice and video.
- **Simple configuration and management:** Cisco ESW 500 Series Switches are designed to be configured and managed by small businesses or the Cisco partners that serve them. Whether you are installing a single switch or an advanced voice and video communications system, simple graphical user interfaces (GUIs) help your staff easily configure, manage, and troubleshoot your network. The Cisco ESW 500 Series includes an embedded web-based configuration utility designed specifically for setting up the ESW 500 switch (Figure 3).

Figure 3. Cisco ESW 500 Configuration Utility



For systemwide deployments, you can use the Cisco Configuration Assistant, a GUI-based application that configures all of the devices that are part of the Small Business Pro Series as well as the Cisco Smart Business Communications System. Both the embedded Configuration Utility and Cisco Configuration Assistant feature Cisco Discovery Protocol to automatically discover all Cisco devices and allow them to share information about one another. The tools also employ Cisco Smartports technology, which provides preset options for quickly configuring all ports on a Cisco ESW 500 Series Switch, including QoS and security features (Figure 4). Once the network is deployed, Cisco Configuration Assistant can generate status reports, synchronize passwords, and upgrade software across all of your Cisco network devices. All of these features reduce the time and effort your staff must devote to network deployment and troubleshooting, so that they can focus on your business priorities. Cisco Configuration Assistant is available for download free of charge at http://www.cisco.com/go/configassist.

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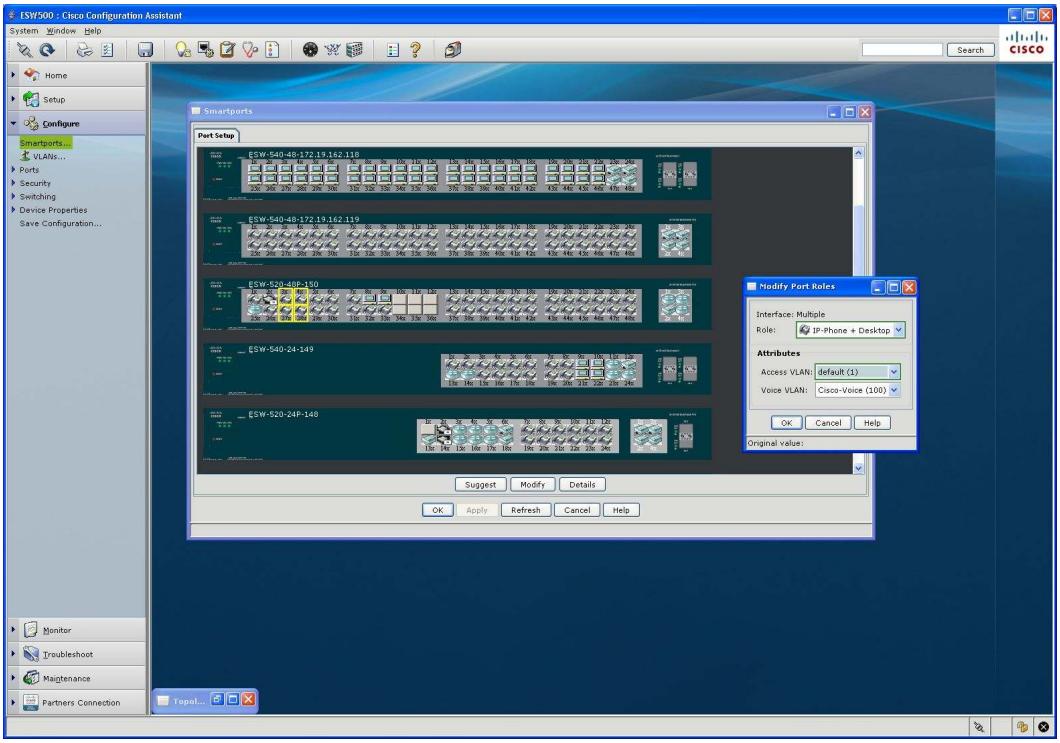
Figure 4. Cisco Configuration Assistant—Front Panel View



- **Strong network security:** Cisco ESW 500 Series Switches provide several layers of security to protect your business. Support for IEEE 802.1X port security can help ensure that only authorized users and applications can access your wired and wireless LAN. Access control lists (ACLs) can restrict access to sensitive portions of the network and guard against attacks by keeping unauthorized users from logging in. The Cisco ESW 500 Series also supports virtual LANs (VLANs) to segment traffic and workgroups, and MAC address notification features to allow administrators to track where and when users enter the network.
- **Easy integration with the Cisco Smart Business Communications System:** The Cisco ESW 500 Series is designed to integrate with the Smart Business Communications System (SBCS) to provide a complete data, voice, video, and wireless networking solution for your business. For example, the ESW 500 Series ships with a default configuration that allows for “plug-and-play” in a SBCS voice deployment. Simply connect an IP phone to the network, and it immediately powers up and gets a dial tone.
- **Expansion ports:** The Cisco ESW 500 Series offers Small Form-Factor Pluggable (SFP) expansion slots that give you the option to add fiber-optic or Gigabit Ethernet uplink connectivity to the switch. With the ability to increase the connectivity range of the switches, you have more flexibility to design your network around your unique business environment, and to easily connect switches on different floors or across the business.
- **5-year enhanced Cisco warranty:** Cisco ESW 500 Series Switches come with a 5-year limited hardware warranty that includes next-business-day advance hardware replacement (where available). In addition, Cisco offers software application fixes for the duration of the warranty and telephone technical support, through the Cisco Small Business Support Center, at no charge for the first 90 days following the date of purchase. The warranty also features complimentary access for one year to online customer chat support during local business hours.

  To find out more about the countries where next-business-day advance hardware replacement is available, access telephone technical support, or access online customer chat support, go to: http://www.cisco.com/go/smallbizsupport.

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- **Cisco Small Business Pro Service:** The optional Cisco Small Business Pro Service for ESW 500 Series Switches extends the product's support and offers software updates to provide additional peace of mind at an affordable price. This rich service offering provides an additional three years of telephone support so you can get the most value from your Cisco ESW 500 Series Switch. For more information, visit: http://www.cisco.com/go/proservice.

Table 1 gives the product specifications for the Cisco ESW 500 Series Switches.

Table 1. Product Specifications

Feature	Description
Performance	
Switching capacity	• ESW-520-8P: 3.6 Gbps • ESW-520-24:12.8 Gbps • ESW-520-24P: 12.8 Gbps • ESW-520-48: 17.6 Gbps • ESW-520-48P: 17.6 Gbps • ESW-540-8P: 18 Gbps • ESW-540-24: 48 Gbps • ESW-540-24P: 48 Gbps • ESW-540-48: 96 Gbps
Forwarding capacity	Forwarding rate based on 64-byte packets: • ESW-520-8P: 2.7 million packets per second (mpps) • ESW-520-24: 9.5 mpps • ESW-520-24P: 9.5 mpps • ESW-520-48: 13 mpps • ESW-520-48P: 13 mpps • ESW-540-8P: 13.4 mpps • ESW-540-24: 35.7 mpps • ESW-540-24P: 35.7 mpps • ESW-540-48: 71 mpps
Flash	8-port models: 16 MB 24- and 48-port models: 32 MB
DRAM	128 MB
Layer 2 Switching	
Spanning Tree	• IEEE 802.1D Spanning Tree • IEEE 802.1w Rapid Spanning Tree • IEEE 802.1s Multiple Spanning Tree • Fast linkover
VLANs	VLAN support for: • 802.1Q tag-based VLANs • Protocol-based VLAN • Management VLAN • Multicast TV VLAN • Private VLAN Edge (PVE) • Generic VLAN Registration Protocol (GVRP)
Head-of-line (HOL) blocking	HOL blocking prevention
Smartports (Preset Cisco Recommended Network Configuration, QoS, and Security)	
Desktop	• Optimized for desktop connectivity • Configurable VLAN setting • Port security enabled to prevent unauthorized access to the network
IP phone plus desktop	• Optimized QoS for IP phone and desktop configurations • Voice traffic placed on "Cisco-Voice" VLAN • Configurable data VLAN • QoS level assures that voice-over-IP (VoIP) traffic takes precedence • Port security enabled to prevent unauthorized access to the network

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Router	Configured for optimal connection to a router or firewall for WAN connectivity
Switch	• Configured as an uplink port to another switch or router Layer 2 port for fast convergence • Enables 802.1Q trunking
Access point	• Configured for optimal connection to a wireless access point • Configurable VLAN
Guest	• Guests are allowed access to the Internet but not to the company network • All guest ports are placed on the "Cisco-Guest" VLAN • Port security is enabled to limit unauthorized access to the network
Diagnostics	• Customers can connect diagnostic devices to monitor traffic on other switches (configurable using Cisco Network Assistant only)
Server	• Can be classified as trusted, critical, business, or standard server: • Trusted: For use with the Cisco Unified Communications 500 Series; same QoS setting as voice (VoIP traffic is prioritized) • Critical: For critical servers with QoS set higher than default • Business: Default setting; QoS set higher than desktop Internet traffic • Standard: For servers set to the same level as regular desktop Internet traffic. Configurable VLAN port security is enabled to limit unauthorized access to the network
Video surveillance	• Configured for optimal connection to a video surveillance camera such as the Cisco PVC2300 Business Internet Video Camera
Printer	• QoS settings are the same as for Desktop, Access Point, and Standard Server • Configurable VLAN • Port security is enabled to limit unauthorized access to the network
Other	• Allows for flexible connectivity of nonspecified devices • Configurable VLAN • No security • No QoS policy
Security	
SSL	Encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch
IEEE 802.1X	RADIUS authentication, MD5 hash; guest VLAN; single/multiple host mode
ACLs	Filtering or rate limiting of traffic flows based on Layer 2, Layer 3, or Layer 4 access control parameters (ACPs).
Quality of Service (QoS)	
Priority levels	4 hardware queues
Scheduling	Priority queuing and weighted round-robin (WRR)
Class of service	• Port based • 802.1p VLAN priority based • IPv4 IP precedence/type of service (ToS)/differentiated services code point (DSCP) based • Differentiated Services (DiffServ) • Classification and re-marking ACLs
Rate limiting	Ingress policer; egress rate control; per VLAN
Availability	
Link aggregation	Using IEEE 802.3ad Link Aggregation Control Protocol (LACP), up to 8 ports in up to 8 groups
Storm control	Broadcast, multicast, and unknown unicast
Denial-of-service (DoS) prevention	DoS attack prevention
IGMP (versions 1 and 2) snooping	IGMP limits bandwidth-intensive multicast traffic to only the requesters; supports 256 multicast groups
Power redundancy	Connection to redundant power supply unit for power redundancy
Management	
ESW 500 Switch Configuration Utility	Built-in browser-based utility for easy device configuration (HTTP/HTTPS). Supports configuration, system dashboard, and system maintenance and monitoring.
Cisco Configuration Assistant	Allows device configuration and system management for streamlined integration with Cisco Smart Business Communications System and other Cisco Small Business Pro Series products
Simple Network Management Protocol (SNMP)	SNMP versions 1, 2c, and 3 with support for traps

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Device discovery	Cisco Discovery Protocol				
Auto configuration	Switch configuration file download through Dynamic Host Configuration Protocol (DHCP)				
Remote Monitoring (RMON)	Embedded RMON software agent supports 4 RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis				
Firmware upgrade	Web browser upgrade (HTTP/HTTPS) and Trivial File Transfer Protocol (TFTP) Cisco Configuration Assistant upgrade Dual images for resilient firmware upgrades				
Port mirroring	Traffic on a port can be mirrored to another port for analysis with a network analyzer or RMON probe				
Power over Ethernet Specifications					
	ESW-520-8P	**ESW-520-24P**	**ESW-520-48P**	**ESW-540-8P**	**ESW-540-24P**
IEEE 802.3af PoE delivered over any of the RJ-45 ports within the listed power budgets	Maximum power of 15.4W to any 10/100 port; 60W total	Maximum power of 15.4W to any 10/100 port; 180W total	Maximum power of 15.4W to any 10/100 port; 370W total	Maximum power of 15.4W to any 10/100/1000 port; 123W total	Maximum power of 15.4W to any 10/100/1000 port; 280W total
Ports	• ESW-520-8P: 8 RJ-45 connectors for 10BASE-T/100BASE-TX; one 10BASE-T/100BASE-TX/1000BASE-T port; 1 combo SFP slot • ESW-520-24 and ESW-520-24P: 24 RJ-45 connectors for 10BASE-T/100BASE-TX; two 10BASE-T/100BASE-TX/1000BASE-T ports; 2 combo SFP slots • ESW-520-48 and ESW-520-48P: 48 RJ-45 connectors for 10BASE-T/100BASE-TX; two 10BASE-T/100BASE-TX/1000BASE-T ports; 2 SFP slots • ESW-540-8P: 8 RJ-45 connectors for 10BASE-T/100BASE-TX/1000BASE-T; one 10BASE-T/100BASE-TX/1000BASE-T port; 1 combo SFP slot • ESW-540-24 and ESW-540-24P: 24 RJ-45 connectors for 10BASE-T/100BASE-TX/1000BASE-T with 4 Gigabit combo SFP slots • ESW-540-48: 48 RJ-45 connectors for 10BASE-T/100BASE-TX/1000BASE-T with 4 combo Gigabit SFP slots All units: Console port; automatic medium dependent interface (MDI) and MDI crossover (MDI-X); auto negotiate/manual setting; port for connecting to redundant power supply unit				
Buttons	Reset button				
Cabling type	Unshielded twisted pair (UTP) Category 5 or better for 10BASE-T/100BASE-TX; 1000BASE-T recommended				
LEDs	Power, Fan, Link/Activity, PoE, Speed, Redundant Power Supply (not available on ESW-520-8P and ESW-540-8P)				
Standards	• 802.3 10BASE-T Ethernet • 802.3u 100BASE-TX Fast Ethernet • 802.3ab 1000BASE-T Gigabit Ethernet • 802.3z Gigabit Ethernet • 802.3x flow control • 802.3ad LACP • 802.3af PoE • 802.1D Spanning Tree Protocol (STP) • 802.1Q/p VLAN • 802.1w Rapid STP • 802.1s Multiple STP • 802.1X port access authentication				
Environmental					
Dimensions **W x D x H**	• 24- and 48-port models: 17.32 x 14.70 x 1.73 in. (440 x 375 x 44 mm) • 8-port models: 8.66 x 6.70 x 1.72 in. (220 x 170 x 44 mm)				
Unit weight	• ESW-520-8P: 2.25 lb (1.02 kg) • ESW-520-24: 4.41 lb (2 kg) • ESW-520-24P: 4.91 lb (2.23 kg0 • ESW-520-48: 4.83 lb (2.19 kg) • ESW-520-48P: 6.01 lb (2.73 kg) • ESW-540-8P: 2.25 lb (1.02 kg) • ESW-540-24: 4.77 lb (2.16 kg) • ESW-540-24P: 5.72 lb (2.60 kg) • ESW-540-48: 4.91 lb (2.23 kg)				
Power	• 24- and 48-port models: 100–240V 47–63 Hz, internal, universal; also equipped with external redundant power supply connector for external power supply, -48V DC • ESW-520-8P: Universal 100–240VAC 50–60 Hz, external 80W power adapter, 48VDC • ESW-540-8P: Universal 100–240VAC 50–60 Hz, external 150W power adapter, 48VDC				

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Certifications	• 24- and 48-port models: UL (UL 60950), CSA (CSA 22.2), CE mark, FCC Part 15 (CFR 47) Class A • 8-port models: UL, cUL(UL60950-1, CSA (CSA22.2), CB(IEC60950-1), FCC Part 15B (CFR47) Class A, CE mark, C-tick		
Operating temperature	32°to 104℉ (0°to 40℃)		
Storage temperature	–4°to 158℉ (–20°to 70℃)		
Operating humidity	10% to 90%, relative, noncondensing		
Storage humidity	10% to 95%, relative, noncondensing		
Predicted mean time between failures (MTBF)	• ESW-520-8P: 393,993 hours • ESW-520-24: 308,559 hours • ESW520-24P: 167,937 hours • ESW-520-48: 155,680 hours • ESW-520-48P: 88,810 hours • ESW-540-8P: 393,993 hours • ESW-540-24: 173,700 hours • ESW-540-24P: 100,086 hours • ESW-540-48: 93,480 hours		
Acoustic noise	**Model**	**Fan (Number/Speed)**	**Under 35°Celsius**
	ESW-520-8P	Fanless	
	ESW-520-24	1/6000 rpm	40.6 dB
	ESW-520-24P	2/9000 rpm	50 dB
	ESW-540-8P	Fanless	
	ESW-540-24	2/6000 rpm	40.2 dB
	ESW-540-48	3/9000 rpm	41.4 dB
Package Contents			
• Cisco Small Business Pro ESW 500 Series Switch • Power cord (for 24- and 48-port models) • Power adapter and cord (for 8-port models) • Mounting hardware • Serial cable • CD-ROM with user documentation (PDF) • Quick-start guide			
Minimum Requirements			
• Web browser: Mozilla Firefox version 1.5 or later; Microsoft Internet Explorer version 6.0 or later • Category 5 Ethernet network cable • TCP/IP, network adapter, and network operating system (such as Microsoft Windows, Linux, or Mac OS X) installed on each computer in the network			

Ordering Information

Table 2 provides ordering information for the Cisco ESW 500 Series Switches.

Table 2. Ordering Information

Switch Models	
Part Numbers	**Description**
ESW-520-8P-K9	• Eight 10/100 PoE ports • 1 expansion port: One 10/100/1000BASE-T and 1 combo* SFP slot
ESW-520-24-K9	• Twenty-four 10/100 Ethernet ports • 4 expansion ports: Two 10/100/1000BASE-T and 2 combo* SFP slots
ESW-520-24P-K9	• 24 10/100 PoE ports • 4 expansion ports: Two 10/100/1000BASE-T and 2 combo* SFP slots
ESW-520-48-K9	• Forty-eight 10/100 Ethernet ports • 4 expansion ports: Two 10/100/1000BASE-T and 2 SFP slots
ESW-520-48P-K9	• Forty-eight 10/100 PoE ports

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	• 4 expansion ports: Two 10/100/1000BASE-T and 2 SFP slots
ESW-540-8P-K9	• Eight 10/100/1000 PoE ports • 1 expansion port: One 10/100/1000BASE-T and 1 combo* SFP slot
ESW-540-24-K9	• Twenty-four 10/100/1000 Ethernet ports • 4 expansion ports: 4 combo* SFP slots
ESW-540-24P-K9	• Twenty-four 10/100/1000 PoE ports • 4 expansion ports: 4 combo* SFP slots
ESW-540-48-K9	• Forty-eight 10/100/1000 Ethernet ports • 4 expansion ports: 4 combo* SFP slots
Redundant Power Supply	
RPS1000	RPS1000 380W Redundant Power Supply Unit
MFE Transceivers Description	
MFEBX1	100BASE-BX-20U SFP transceiver, for single-mode fiber, 1310 nm wavelength, support up to 20 km
MFEFX1	100BASE-FX SFP transceiver, for multimode fiber, 1310 nm wavelength, support up to 10 km
MFELX1	100BASE-LX SFP transceiver, for single-mode fiber, 1310 nm wavelength, support up to 2 km
MFE Transceivers Description	
MGBBX1	1000BASE-BX-20U SFP transceiver, for single-mode fiber, 1310 nm wavelength, support up to 40 km
MGBLH1	1000BASE-LH SFP transceiver, for single-mode fiber, 1310 nm wavelength, support up to 40 km
MGBLX1	1000BASE-LX SFP transceiver, for single-mode fiber, 1310 nm wavelength, support up to 10 km
MGBSX1	1000BASE-SX SFP transceiver, for multimode fiber, 850 nm wavelength, support up to 550 m
MGBT1	1000BASE-T SFP transceiver for category 5 copper wire, support up to 100 m

* Combo SFP slots include one 10/100/1000BASE-T Ethernet port and 1 SFP-based Gigabit Ethernet slot for fiber, 1 port active at a time.

A High-Performance Foundation for Your Business Network

With so much depending on your business network, you need a business-class network foundation. The Cisco ESW 500 Series Switches provide the easy-to-use, feature-rich solution you need to reliably deliver your essential business applications, help employees stay connected and productive, and keep your business moving.

For More Information

For more information about the Cisco Small Business Pro Series, visit http://www.cisco.com/go/smallbusiness, and for more information on the Cisco ESW 500 Series, visit http://www.cisco.com/go/esw500.

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